Accounting Historians Journal

Volume 13
Issue 1 *Spring 1986*

Article 5

1986

Use of interest as an element of cost in Germany in the 16th and 17th centuries

Nasuhi Bursal

The Accounting Historians Journal
Vol. 13, No. 1
Spring 1986

Nasuhi Bursal
THE OHIO STATE UNIVERSITY

THE USE OF INTEREST AS AN ELEMENT OF COST IN GERMANY IN THE 16TH AND 17TH CENTURIES

Abstract: Debate still continues in the United States of America over the inclusion of interest as an element of cost. The practice was accepted as early as 1558 in Germany, and has been integrated into accounting theory by Schmalenbach in this century.

Over the last decade, at least one authority[1] has strongly advocated the recognition of interest on equity as a cost. The proposal has received mixed responses from other scholars, among them a reminder [Previts, 1974] of the equity interest controversy in the early 1910's.[2] This issue has a history, not only in the United States, but also in other countries. This note describes the history of the equity interest concept in Germany, mainly based on a doctoral dissertation by Juerg Schueppenhauer[3] completed in 1971. Schueppenhauer's quotations from original sources are presented here in the same format, preceded by short summaries.

One of the key economic issues of the Middle Ages was the determination of a fair price *(justum pretium)* which is related to the usury dogma of the Christian Church and to the prohibition of interest by Canonic Law. One way of securing fair prices was to set tariff rates on essential consumer goods. For other goods and services, prices could be negotiated by the contracting parties within the limits of the natural price *(pretium naturale).* Natural prices consisted of three components; purchase cost and labor being the two basic ones. The third element represented an exception from the interest prohibition. Application of a certain percentage on purchasing and labor costs as "interest" was allowed to protect against damage or loss *(damnum emergens)* and foregone profit *(lucrum cessans)* for term sales. Although this latter part of the interest allowed essentially corresponds to regular interest on credit sales, its interpretation as "foregone profit" already points to the origin of the opportunity cost concept. The first known document that includes such an interest calculation dates back to Meder in 1558.[4] In a total

cost calculation for oil to be purchased in Lisbon, and to be sold in Antwerp, interest is calculated in two parts: first as interest *(ziza)* on purchase cost, secondly as an insurance *(securantza)* to cover the capital loss based on the total outlays of the merchant.

The following excerpt from Meder's book[5] contains a list of items included in the calculation of oil cost. The first interest item is *(ziza)* which is calculated at 10% of the purchase cost of oil (Real 1,350) and is to be shared equally (Real 1,350/2 = Real 675) by the seller and by the buyer. The second interest item is *(securantza)* which is calculated at 8% of the total oil cost (Real 15,908 × .08 = Real 1,272).

Lisaboner Oll per Antorff:		
Oll in Lissabona einkaufft, Rechen erstlich daz das Faß vngefehrlich kost	Real	13500
Vnd Ziza, das der Kauffer ½ vn der verkauffer ½ zalt	"	675
Unterkauff vom einkauffen ½%	"	67
Fur zwo Pipen vngefehrlich mit der Ziza	"	900
der stat Lisabona zeychen zu brennen	"	16
Rebatimenta der Fasser - - -	"	60
Tretto del Pattron	"	90
Aufzutragen und einzuladen -	"	50
Auaria quida in di marinner	"	50
Vnnd wo mans auff dem land einkaufft, sy nahet oder fern biss in Losabona bracht, setz ich ungefehrlich	"	500
Summa 15908, Securantza 8 Ph.	"	1272
Fracht, 5 Duck. p. Tonnöl	"	2000
Abgang der Lachi p. 100	"	895
Vnkost vnd Zoll im Niderland	"	400

Trading practices were freed from the interest prohibition during the Cameralistic period, a German form of Mercantilism, in the 17th and 18th centuries. The first relevant document available from this period is by Becher in 1673.[6] Becher tried to distinguish between capital tied up in fixed and current assets, and separately calculated imputed interest on these amounts. In the following excerpt Becher[7] gives an example of profit estimation for a manufacturer of silk stockings. He first determines the amount of fixed capital tied up in 34 pieces of equipment needed for the manufacturing process. Besides their purchase cost, this also includes freight, salaries for the training and set-up work performed by the foreman, and the rent for the rooms where the equipment is located. Interest of 50% is calculated on the total amount of fixed capital (Fl. 4,000 × .50 = Fl. 2,000).

The calculation of the amount of working capital includes material cost as well as wages needed at different stages of the manufactur-

ing process. An interest charge of 50% is added on the total amount of operating costs treated as working capital (Fl. 13,171 × .50 = Fl. 6,585,18).

Becher compares the expected sales revenue (Fl. 24,752) with total costs, including the two interest items, (Fl. 21,756,54) and comes to the conclusion that this business deal would result in a profit of Fl. 3,045 in excess of all costs. However, in his last sentence, he still states that the total profit amounts to Fl. 11,630 which also includes interest.

Erster Ueberschlag auf ein Jahr und 34 Instrumenten, was die darauff gewurkten so Seidene als wüllene Strumpf zu bereiten kosten, und was darbey für ein Gewinn seyn kann:

Lit. A.

	fl. Kr.
Unbeweglich Kapital, so auf den Instrumenten liegt.	
1. Die 34 Werk kosten zu verfertigen 1600 Rthlr. wiewohl solche nicht kloecken werden, sondern müßte noch 400 Rthlr. darzu seyn, Thut 200 Rthlr. an fl. aber	3000,—
2. Es haben die Handwerksleut und Instrumenten aus Holland zu bringen gekostet ongefähr 200 Rthlr. thut	300,—
3. Der Meister hat Besodung vor Lehr- und Einrichtgeld	600,—
4. Beständiger Hauszins, wo die Werken stehen	100,—
Und soviel kapital ist gangen auf die Substanz des Werkes, nehmlich auf die Instrumenten und derer Zurichtung, auch Unterrichtung der Jungen, welches Kapital stets darauf liegen bleibt, und verinteressiert werden muß, sich belauffend auf	4000,—
Diese 400 fl. mit 50 pro cento jährlich verinteressiert belauffen sich an jährlichem Interesse	2000,—

Lit. B.

Beweglich Kapital, so auff den Verlag gehet: Nun folget das Kapital zum Verlag, welches beweglich ist und sich jährlich sampt dem Interesse wiederumb einbringen muß.	
1. 34 Jungen, so arbeiten, einem die woche einen fl. geben, thut in zwey und fünffzig wochen fl.	1728,—
2. Nun wird gerechnet, daß ein jung täglich 1 paar Strümpf oder doch die wochen nur 4 paar mache, thun 34 instrumenten, wochentlich 136 paar, ist jährlich paar 7072. Die betragen sich 5 paar auf ein lb. (wiegend das paar bey 6 Loth, wèlches das rechte englische Gewicht ist, jährlich an Seyden 1326 lb., das lb. vor 6 fl. thun	7956,—
3. Die Seyden zu Zwirnen, vor das lb. 1/2 fl., thun 1326 lb.	663,—
4. Die Seyden zu färben, das lb. einen halben fl., thun 1326 lb.	663,—
5. Die Strümpfe zu nähen, das paar 15 Kr., thun 7072 paar	1768,—

6. Das paar zu pressen und einzupacken, 3 Kr., thun 7072 paar 353,36

Summa aller Unkosten jährlichen Verlages 13171,36*

*Dusemann points out here a calculation error. The correct total amounts to 13,131.36. This results, of course, in errors in the following calculations. However, they may not be taken here into consideration.

Lit. C.

Bilanz, oder Gegeneinanderhaltung des Gewinns gegen die Unkosten:

Lauth Lit. A. wegen der 4000 fl. Capital auff den instrumenten hafftend, und darauf liegen bleibend, jährlich mit 50 pro cento verinteressiert, belaufft sich das Interesse fl. ..... 2000,—

Lauth Lit. B., des jährlichen Verlages und des dazu erforderten Capitals, welches jährlich wiederum aus der Handlung resultieren muß, sich erstrekkend auf 13171,36

Welches jährliche Kapital auch mit 50 pro cento verinteressiert werden muß, belauft sich also das jährliche Interesse 6585,18

Summa summarum aller Spesen, so jährlich dieser Verlag austragen muß ist 21756,54

Hingegen seynd verfeinert und gelieffert 7072 paar Seyden Strümpf, das paar nicht höher gerechnet als pro vierdtehalben fl., thun ..... 24752,—

Die Einnahm gegen schuldige Bezahlung abgezogen, nehmlich 21756,— gegen 24752,— befindet sich nicht allein, daß das Kapital Lit. A. sich mit 50 pro cento verinteressiert, sampt Ueberschuß von 3045 fl. 6 kr. Aus welchem allem dann klärlich erhellet, daß sich diese Manufaktur salvo kapitali, nicht allein mit 50 pro cento verinteressiert, sondern auch, wenn diese gesamptliche Fabrikam gawonnen habe.

Schluß: Befindet sich also, daß 34 Instrumenten in 1 Jahr über alle Unkosten Gewinn geben 11630 fl."

Other notable authors of this period include Zincken,[8] May,[9] Jung[10] and Leuchs. Zincken [1755] calculated interest on total capital goods used, without distinction between borrowed and equity capital. He makes the suggestion that businessmen should also include labor cost for their own work performed in their business in their cost calculations along with interest on capital tied up in the business. This seems to be the first mention of an imputed labor cost concept by a scholar.

May [1763] introduced imputed rent as a special item of interest for self-owned buildings used for business purposes. Jung [1799] went one step further by using average capital tied up in business for the calculation of interest. The following excerpt from Jung's book[11] contains a seven-point list of all cost items to be considered in a manufacturing business. Items 2, 3, and 6 relate to interest to

be calculated on fixed and working capital tied up in the manufacturing process.

1. Der Einkaufspreis der rohen Waaren oder sämtlicher Materalien zu einer Fabrike.
2. Die Interessen von diesem ausgelegten Gelde, von der Zeit des Einkaufs an, bis zum Verkauf.
3. Die Interessen von dem Kapital, welches alle Gebäude gekostet haben, die um der Handlung willen da sind, nebst der jährlichen Unterhaltung derselben, in mittlerem Durchschnitt genommen.
4. Der jährliche Aufwand auf alle Werkzeuge, welche die Handlung oder Fabrike erfordert, wiederum nach dem mittleren Verhältnis angeschlagen.
5. Alle Arbeitslöhne, nebst Transportkosten, Spedition, Zöllen, Aus- und Eingangsrechten u. dgl.
6. Die Interessen von diesen Geldern, von der Zeit des Vorschusses an bis man wieder Geld für die Ware bekommt.
7. Endlich alle Comptiorunkosten, Besoldung der Bedienten, eigene Diäten des Handelspatrons, Papier, Bücher, Dinte, Feder, Briefporto u. dgl."

Jung also appears to be the first one to distinguish between direct and indirect costs. He states in the following excerpt that some costs may be incurred not for specific jobs but for the factory as a whole. These should also be allocated to products along with interest costs. Otherwise, they would be "lost".

> . . . , es gibt nemlich bei einer Fabricke vielerley Ausgaben, die nicht auf einzelne Waaren sondern auf die ganze Fabricke verwendet werden, zB. Bau-Reparationen, Werkzeuge-Aufwand, wenn nemlich neu angeschafft werden oder alte verbessert werden; Arbeitslöhne für solche Arbeiten. die nicht an einer bestimmten Waare, sondrn bald hier bald da arbeiten, . . .
>
> Auf S.93, §191 des gleichen Werkes verlangt er, daß alle diese Kosten auf das einzelne Erzeugnis verrechnet werden müssen, da sonst "die Unkosten, nebst den Zinsen vom Bau- und Werkzeug-Capital verlören" wären."

A more detailed treatment of interest cost can be found in the works of Leuchs [1804].[12] For the first time, Leuchs explicitly distinguishes between borrowed and equity capital, and offers a clear explanation for the inclusion of equity interest as an opportunity cost. In the following excerpts Leuchs[13] first mentions the interest cost on working (No. 9) and fixed capital (No. 10) as two items to be considered in cost and profit calculations. The first interest is for capital tied up in inventories starting from the time of their purchase until the time their sales revenue is collected. The second interest is to be calculated on capital tied up in buildings and equipments including their maintenance costs, and considering the time period this capital cannot be used for other purposes (would be lost).

The last part of the excerpt contains the interpretation presented by Leuchs for the calculation of an imputed cost of capital. He states that capital tied up in business could also have earned an interest by lending it to other users. Therefore, a portion of the business income equal to this foregone interest should not be considered as profit but should rather be added to purchase prices as an interest cost, even without having an actual cash outlay. In case of using borrowed capital instead of owners' equity, interest cost would result in real cash outflow.

9. Die Zinsen des an einer Ware liegenden Kapitals, von der Zeit der Bezahlung bei dem Einkauf bis zur Zeit des wahrscheinlichen Wiederempfanges bei einem zu hoffenden oder schol geschlossenen Verkaufe. . . . Zu diessen Zinsen vom Einkauf bis zum wahrscheinlichen Verkauf, müssen dann noch die Zinsen vom Verkauf bis zum wahrscheinlichen Eingang des Verkaufspreises geschlagen werden".

10. Die Zinsen des Kapitals, das an den Gebäuden liegt, in so ferne wir sie vloß Handels wegen haben müssen, nebst den Unterhaltunkskosten, oder der Miethe. Ferner die Zinsen des Kapitals, das an Gefäßen, Geräthen usw. liegt, und die Unterhaltungskosten, mit Zuziehung der Dauer ihres Gebrauchs, in so ferne das Kapital damit verloren gehet".

Sobald wir nämlich eine Waare gekauft und bezahlt haben, so ist sie als todtes oder uneinträgliches Kapital so lange anzusehen, bis wir sie nicht nur verkauft, sondern auch die Verkaufssume dafür erhalten haben und wieder verwendet haben. Nun erhalten wir aber von unserem Gelde schon durch das Verleihen ohne Arbeit einen Gewinn (Zins), und der Gewinn also, der bei einem Handel nicht größer wäre als die Zinsen, die man von dem daran gelegten Gelde, von der Zeit der Auslage beim Einkauf bis zur Zeit des Eingangs der Verkaufssume erhalten würde, ist kein Handelsgewinn, wir müssen diese Zinsen also als Auslage zu dem Einkaufspreis schlagen. Ist das Kapital ganz oder zum Theil nicht unser Eigenthum, dann sind die Zinsen wirkliche Auslagen, und müssen um so notwendiger zu den Einkaufskosten geschlagen werden.

These ideas were transmitted to German accounting theory by Schmalenbach [1899, 1919, 1934].[14] He first provided a clear separation of the areas of financial and cost accounting: Financial accounting has the function of reporting on the financial results of an entity for a given time period, whereas cost accounting is primarily output-oriented and concerned with the allocation of production costs to units of output. Secondly, and more importantly, unit cost is defined by Schmalenbach as the value of production factors consumed during the production process. This value implies a broad concept and is essentially based on the marginal utility theory of the Austrian economist Wieser [1914]. Production factors also include capital tied up in the production process. The cost of capital as a limited resource is determined uniquely by the foregone profit

of the least profitable alternative of its use. Therefore, production costs not only include the expenditures made for the acquisition and use of different factors of production, but also the cost of tying up capital, regardless of its source, for the availability of these factors over a given time period. In fact, the same kind of reasoning also leads to the inclusion of an imputed depreciation amount for the unit cost calculations, one which may differ from the financial accounting depreciation with respect to its basis and rate. The clear separation of the fields of financial and cost accounting within the whole accounting system facilitates the allocation of imputed costs to units of production. This broad concept still constitutes the basis of the current cost accounting theory and practice in West Germany.

FOOTNOTES

[1]Anthony, Robert N. His main publications on this topic are listed below:
—"Accounting for the cost of equity," *Harvard Business Review,* Vol. 5 (November-December 1973), pp. 88-102.
—"Let's account for interest", American Accounting Association, *Collected papers for the Annual Meeting (August 18-20, 1975),* Sarasota, Fl., pp. 268-271.
—*Accounting for the cost of interest,* Lexington Books, 1975.
—"Recognizing the cost of interest on equity," *Harvard Business Review,* Vol. 60 (January-February 1982), pp. 91-96.
—"Equity interest—its time has come," *Journal of Accountancy,* Vol. 154 (December 1982), pp. 76-93.
—*Tell it like it was: A conceptual framework for financial accounting,* Homewood, Illinois: Richard D. Irwin, Inc. 1983.

[2]Previts, Gary J., "Old wine and. . . . the new Harvard Bottle," *The Accounting Historians Journal,* Vol. 1, Number 1-4 (1974), pp. 19-20; Comment of Anthony: Same journal, Vol. 2 (1975), pp. 108-109. Several articles on this topic have been published especially in the volumes 1 (1974), 2 (1975), 7 (1980) and 9 (1982) of the *Journal of Business, Finance and Accounting* by Amey, Lloyd R., Bartley, Jon W., Gringer, John E., Hemsted, J. R. and Zarifis, Nicos.

[3]Schueppenhauer, Juerg, *Die kalkulatorischen Zinsen in der Kostenrechnung (Imputed interest cost in cost accounting),* Saarbruecken 1971. This doctoral dissertation has been supervised by Prof. Dr. Wolfgang Kilger at the University of Saarland, Saarbruecken, W. Germany, and completed in 1971. I am grateful to Dr. W. Kilger for reference to this work.

[4]Meder, L., *Handel Buch (Book of Commerce),* Nuernberg 1562.

[5]Meder, op. cit. pp. XXIX - XXXI, p. LI: Calculations for silk from Bologna; p. LVIII: Calculations for salt; quoted by Schueppenhauer, p. 14.

[6]Becher, J. J., *Politischer Discurs (Political Discourse),* Frankfurt 1673.

[7]Becher, op. cit. pp. 744-747; quoted by Schueppenhauer, pp. 15-17. This excerpt from Becher's book is taken from a publication of Dusemann, Fr. J., with the title *Der betriebswirtschaftliche Gewinnbegriff in seiner historischen Entwicklung (The business income concept in its historical development),* Stuttgart 1929.

[8]Zincken, G. H., *Anfangsgruende der Cameralwissenschaft (Initial causes of Cameralistic Science),* 1st and 2nd parts, Leipzig 1755.

[9]May, J. C., *Versuch einer allgemeinen Einleitung in die Handlungswissenschaft (Essays of a general introduction in the business science),* 2 volumes, Altona 1763.

[10]Jung, J. G., *Gemeinnutziges Lehrbuch der Handlungswissenschaft* (Textbook for public benefit on business science), Leipzig 1799.

[11]Jung, op. cit. pp. 186-192; quoted by Schueppenhauer, pp. 18-19.

[12]Leuchs, J. M., *System des Handels (System of Commerce),* Facsimile printing of the first edition in 1804. In: *Quellen und Studien zur Geschichte der Betriebswirtschaftslehre (Saurces and studies on the history of business economics),* Vol. 5, Stuttgart 1933.

[13]Leuchs, op. cit. pp. 36-47; quoted by Schueppenhauer, pp. 20-21.

[14]Schmalenbach, Eugen, The main ideas of Schmalenbach on equity interest can be found in his following publications:

—*"Buchfuehrung und Kalkulation im Fabrikgeschaeft* (Accounting and cost calculation in manufacturing business)," *Deutsche Metallindustriezeitung (German Journal of Metal Industry),* 18th year, 1899.

—*"Theorie der Produktionskostenermittlung* (Theory of production cost determination)," *Zeitschrift fuer Handelswissenschaftliche Forschung (Journal for Research in Commercial Science),* 1908/1909.

—"*Selbstkostenrechnung* (Cost Accounting)," *Zeitschrift fuer Handelswissenschaftliche Forschung (Journal for Research in Commercial Science),* 1919.

—*"Zur Theorie der industriellen Kalkulation* (On theory of industrial cost calculation)," *Zeitschrift fuer Handelswissenschaftliche Forschung (Journal for Research in Commercial Science),* 1920.

—*Der Einfluss des Beschaeftigungsgrades auf die industrielle Kostenentwicklung* (The impact of activity level on the industrial cost development), Berlin 1925.

—*Dynamische Bilanz* (Dynamic Accounting), first edition in 1919, last unchanged edition the 11th edition in 1953, translated into English by Murphy, G. W. and Most, Kenneth S., London 1959.

—*Selbstkosterechnung und Preispolitik* (Cost Accounting and Price Policy), Leipzig 1934.

The following two publications are especially recommended for further pursuing the ideas of Schmalenbach and the development of cost concepts in Germany:

—Schoenfeld, Hans Martin, *Cost Terminology and Cost Theory: A Study of its Development and Present State in Central Europe,* University of Illinois at Urbana-Champaign, Center for International Education and Research in Accounting, 1974.

—Forrester, David A. R., *Schmalenbach and after: A Study of the Evolution of German Business Economics,* Starthclyde Convergencies, Glasgow 1977.